Differences of Fetal Heart Rate Patterns between Cephalic and Breech Presentation in Induced Labor

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More obstetricians are reluctant to induce labors of breech presentation. We have been managing both cephalic and breech labors by elective induction. In this study evaluated were fetal heart rate patterns in the first stage of breech labor in comparison with those of cephalic labor.

Subject and Method: Randomly selected patients were monitored electronically. Fourty-eight monitor records (28 primiparas and 20 multiparas) in breech group and twenty-six records (10 primiparas and 16 multiparas) in cephalic group were used for comparison. Labors were either induced or augmented in all cases by continuous intravenous infusion of oxytocics with or without artificial rupture of the membranes. Analgesia and anesthesia were given to all patients in the form of balanced analgesia and anesthesia, modified neuroleptanalgesia (diazepam and pentazocine), or epidural anesthesia. FHR was monitored by Corometrics FMS 111, always by direct technic after membrane rupture and by indirect technic before it. Among FHR patterns evaluated were baseline FHR level, baseline long term variability, acceleration, early, variable and late decelerations at the cervical dilatation of less than 5cm, 5 to 7cm, and more than 8cm, respectively. Those three phases of labor were further devided into 20-minute segments for the evaluation of findings. When positive findings of FHR patterns were noted in more than 50% of the 20-minute segment, the segment was judged positive. The positive segments were expressed in percentage in each phase.

Result: Among variables of the two groups of patients, cevical dilatation and effacement at the time of membrane rupture were significantly more advanced in multiparous breech than in multiparous cephalic group. Otherwise these and station of the presenting part were not statistically different between groups. Significant changes were noted in primiparous breeches with progress of labor in terms of long term variability, early and variable decelerations. Multiparous breeches showed significant changes with labor progression in terms of long term variability, acceleration, and variable deceleration. Among primiparous breeches, significantly lower incidence was noted than among cephalics in terms of long term variability at the cervical dilatation of more than 5cm, acceleration at less than 5cm, and early deceleration at 5 to 7cm. Compared with multiparous cephalics, multiparous breeches showed significantly higher incidence of tachycardia before cervical dilatation of 5cm, and of long term variability at 5 to 7cm, while significantly lower incidence of acceleration before 5cm, and early deceleration after 5cm.

Comment: Such ominous FHR patterns as variable and late decele-

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rations were not seen more often in breech group than in cephalic group during the first stage of labor. As has been expected, incidence of early deceleration was higher in cephalic than breech group after the cervical dilatation of 5cm. Lower incidence of long term variability immediately before the 2nd stage in primiparous breech group may indicate that we should be cautious to manage the group in the first stage. However, variability is considered to be influenced by such factors as analgesia and anesthesia. This point remains to be clarified. In the management of breech labor during the first stage, induction or augmentation does not seem to give clinically significant deleterious effect to fetus in terms of FHR patterns.

	CERVICAL DILATATION		
	BEFORE 5cm	5 to 7cm	After 8cm
TACHYCARDIA			
Primiparous Breech	0.6%	0%	0%
Primiparous Cephalic	3.2%	4.8%	14.0%
Multiparous Breech	11.2%	0%	7.7%
Multiparous Cephalic	0%	0%	0%
VARIABILITY			
Primiparous Breech	42.0%	17.2%	7.8%
Primiparous Cephalic	35.5%	33.1%	20.8%
Multiparous Breech	49.5%	47.5%	27.4%
Multiparous Cephalic	49.6%	25.8%	35.0%
ACCELERATION			
Primiparous Breech	32.7%	42.0%	35.3%
Primiparous Cephalic	48.4%	51.2%	57.1%
Multiparous Breech	40.7%	67.3%	40.7%
Multiparous Cephalic	74.5%	55.2%	38.9%
EARLY DECELERATION			
Primiparous Breech	0%	2.4%	10.0%
Primiparous Cephalic	4.8%	56.0%	28.6%
Multiparous Breech	0%	0%	0%
Multiparous Cephalic	2.0%	31.0%	22.2%
VARIABLE DECELERATION			
Primiparous Breech	0.6%	0%	8.6%
Primiparous Cephalic	1.6%	4.9%	14.3%
Multiparous Breech	0%	4.1%	15.4%
Multiparous Cephalic	0%	10.3%	44.3%
LATE DECELERATION			
Primiparous Breech	1.2%	0%	4.3%
Primiparous Cephalic	0%	0%	0%
Multiparous Breech	5.0%	0%	3.8%
Multiparous Cephalic	0%	0%	0%

Table 1. The incidence is shown of FHR patterns in primiparous breech and cephalic groups, and those of multiparas at different phases of the first stage of labor.

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Alterations of the fetal EEG under the influence of labour, hypoxia and analgetics

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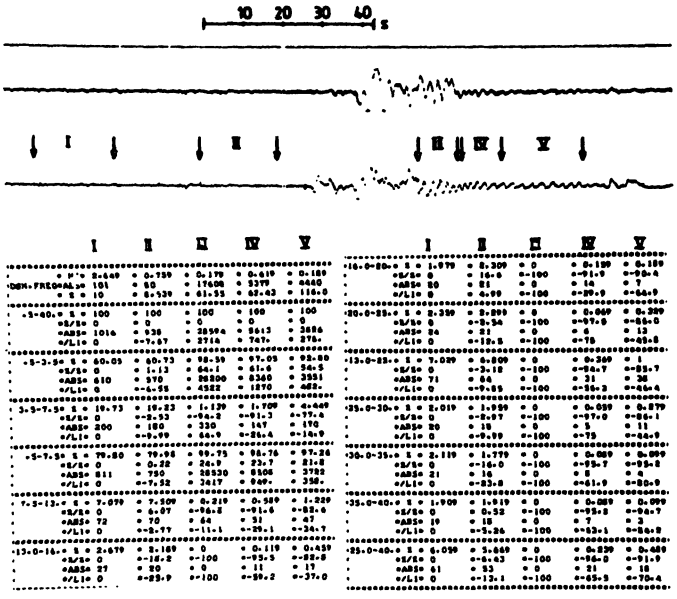
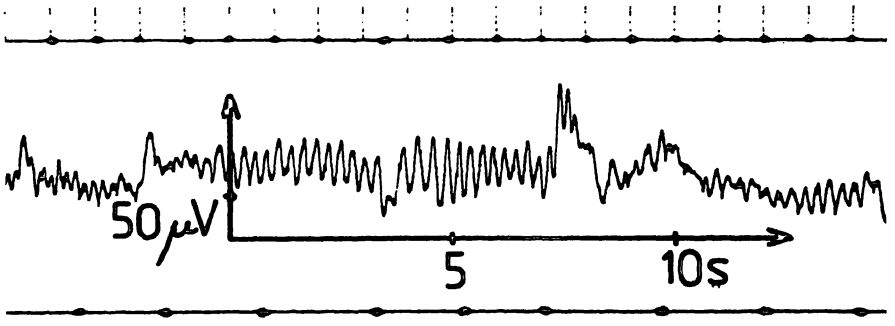
The fetal electroencephalogram during labour was performed in order to investigate the effect of labour, hypoxaemia, analgetics and Piracetam on the fetal brain. Figure 1 shows the distribution of the different frequency ranges before (I + II) and after labour activity (III - V).



An increase of delta waves can be seen immediately after labour activity and at the same time a decrease of theta waves. Alpha and theta waves change in a similar way. An activation of alpha and beta waves can be observed during labour and low $tcpO_2$ combined with late decelerations.



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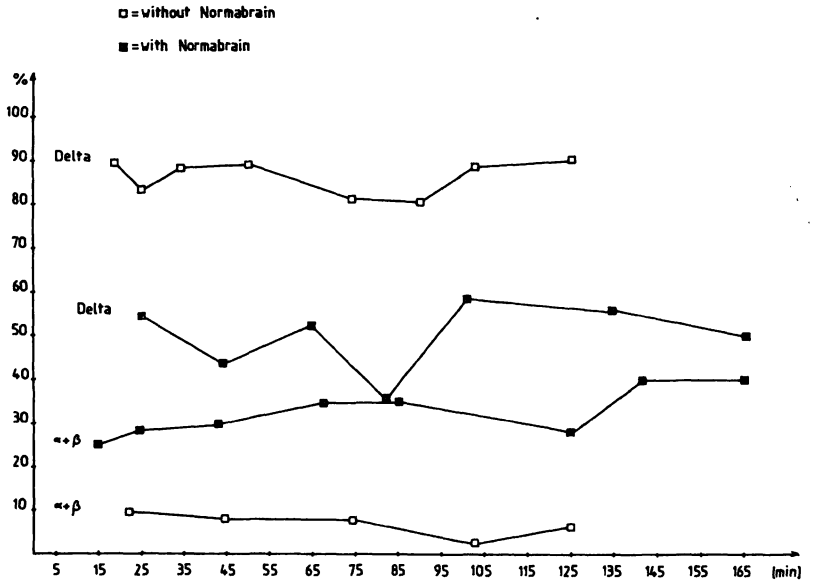
The application of 75 mg Pethidine to the mother causes 20 min later a decrease of the amplitude in the fetal EEG of about 50 %. The frequency was not significantly changed. Another important question was to examine the influence of 9 g/500 ml/ 50 min Piracetam on the fetal EEG. As with respect to the biochemical context of its activity it has been established fo far that:

1. Piracetam increases the ATP/ADP ratio.
2. Piracetam increases the concentration of reduced gluthathione in the brain.

These two processes would be linked with an increased resistance of the brain such as e.g. oxygen deprivation. Our results of long-time EEG evaluations are demonstrated in the following figure representative for this collective.



The distribution of frequency reveales an activation of the high frequency EEG signals combined with a decrease of delta waves. These alterations of the EEG are followed by an improvement of the fetal oxygen supply (1).

References

1. L. v. KLITZING et al.: Computerized analysis of CTG and intrauterine measured $tcpO_2$ of the fetus. (in this journal)

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